

REMARKS

Claims 1-16 are currently pending in the patent application. The Examiner has newly rejected Claims 1-4 and 6-16 under 35 USC 102 as anticipated by Linden and has rejected Claim 5 under 35 USC 103 as unpatentable over Linden in view of Shaylor. Applicants believe that all of the pending claims are patentable over the cited references.

The present invention is directed to a dynamic compiler, a dynamic compiling method, a computer, a storage medium and a support program for optimizing a program during compiling thereof. During translation from source code to machine code, the present invention performs a dynamic analysis during execution to determine whether the execution speed of the program can be increased by fixing, in a specific state, a parameter for a predetermined command in the program; and then employs the results of the analysis to generate a path along which the parameter of the predetermined command is fixed in the specific state. Since the present inventive approach generates the path along which the parameter will be fixed in the specific state, the present invention provides a dynamic compiler method which provides for dynamic specialization in the instances when

JP920000420US1.

-9-

the call method cannot be specified at a location whereat the method call is to be issued.

The Linden patent publication is directed to a dynamic compiler and method whereby code is translated to run on a target machine which is different from the machine for which the code was developed. Under the Linden teachings, the intent and purpose of original instructions in the code are evaluated and new instructions are generated to arrive at the same result on the target machine. What is expressly stated in Linden, at paragraph [[0041]], is that the method provides "an interpolation from the source instructions to the equivalent results to be achieved by the target processor, independent of the operations specified by the source instructions".

Applicants respectfully assert that the Linden patent publication does not anticipate the invention as claimed. Linden is creating new instructions for the target device "independent of operations specified by the source instructions" whereas the present invention uses the "predetermined command in said program" but dynamically generates a path along which a parameter for the command is fixed in a specific state. The language of Claims 1-4 and 7-16 expressly recite determining whether the execution speed can be increased by fixing a parameter for a

JP920000420US1

predetermined command in a specific state and dynamically generating a path along which that parameter is fixed in that state. Linden does not look at a parameter of a predetermined command; rather, Linden looks at intent and purpose of instructions. Further, Linden does not dynamically create a path along which a parameter of a predetermined command is fixed in a specific state. Linden teaches translating an instruction sequence into another sequence where the results is always a constant (paragraph [[0038]]), but that is not the same as or suggestive of dynamically create a path along which a parameter of a predetermined command is fixed in a specific state. Applicants reiterate that Linden is not maintaining a predetermined command, is not determining a parameter for a predetermined command, and is not dynamically creating a path along which a parameter of a predetermined command is fixed in a state.

Applicants note that the Examiner lists terms used in the Linden reference (e.g., "instruction sequence, result, constant, Register=3, optimization step 44, optimized instruction stream" from page 4 of the Office Action), but does not explain how the Linden use of those terms anticipates the invention as claimed.

JP920000420US1

-11-

It is well established under U. S. Patent Law that, for a reference to anticipate claim language under 35 USC 102, that reference must teach each and every claim feature. Since the Linden patent does not teach steps or means for translating and optimizing a program comprising steps of performing a dynamic analysis during execution to determine whether the execution speed of said program can be increased by fixing, in a specific state, a parameter for a predetermined command in said program; employing results of an analysis for the generation, in said program being compiled, of a path along which said parameter of said predetermined command is fixed in said specific state, or obtaining statistical data for appearance frequency for each available state and using that statistical data for dynamically generating a path along which the parameter of a particular command is fixed in that state, it cannot be maintained that Linden anticipates the invention as set forth in the independent claims, Claims 1, 3, 7, 10, 11, and 13-16, or the claims which depend therefrom and add further limitations thereto.

Applicants further note that there is no teaching in Linden which anticipates the claim language of "obtaining statistical data for the appearance frequency of each JP920000420US1

-12-

available state" as is expressly claimed in Claims 2-4, 8-9, 11-12, 14 and 16. Applicants again conclude that the claim language is not anticipated since Linden does not teach or suggest the claimed steps or means for obtaining said statistical data.

With regard to Claim 6, which recites dynamically detecting one command, of the commands in the program, for which a variable can be limited to a predetermined constant value, and for which the processing speed can be increased by limiting the variable to that constant value and generating a path along which the constant value of the variable of the detected command is fixed, the Examiner has again cited paragraph [[0038]]. In that paragraph, Linden teaches translating an instruction sequence into another sequence where the results is always a constant (paragraph [[0038]]), but that is not the same as or suggestive of limiting a variable of an existing command of the program to a constant. Applicants again contend that anticipation under 35 USC 102 is established only when a single prior art reference discloses each and every element of a claimed invention. See: In re Schreiber, 128 F. 3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); In re Paulsen, 30 F. 3d 1475, 1478-1479, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994); In re Spada, 911 F. 2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. JP920000420US1

-13-

Cir. 1990) and RCA Corp. v. Applied Digital Data Sys., Inc., 730 F. 2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Since the Linden patent publication does not teach the detecting of an existing command for which a variable can be limited to a constant and dynamically generating a path as claims, it cannot be maintained that Linden anticipates the language of Claim 6.

In rejecting Claim 5, which recites detecting a command for which a method call destination can be identified and dynamically generating a path along which the method call destination is limited, the Examiner has additionally cited the teachings of the Shaylor reference in combination with the Linden reference. Applicants rely on the arguments presented above with respect to the Linden reference. Applicants further note that the Shaylor reference does not supply those teachings which are missing from Linden. While Shaylor teaches "inlining", neither Shaylor nor Linden teach or suggest detecting a command "of the commands in said program" for which a method call destination can be identified and then dynamically generating a path along which the destination is limited.

JP920000420US1

-14-

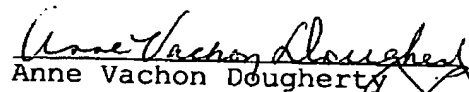
For a determination of obviousness, the prior art must teach or suggest all of the claim limitations. "All words in a claim must be considered in judging the patentability of that claim against the prior art" (In re Wilson, 424 F. 2d 1382, 1385, 165 USPQ 494, 496 (C.C.P.A. 1970)). Since the cited references fail to teach each and every one of the claim limitations, a *prima facie* case of obviousness has not been established by the Examiner.

Based on the foregoing amendments and remarks, Applicants respectfully request entry of the amendments, reconsideration of the amended claim language in light of the remarks, withdrawal of the rejections, and allowance of the claims.

Respectfully submitted,

M. Kawahito, et al

By:


Anne Vachon Dougherty
Registration No. 30,374
Tel. (914) 962-5910

JP920000420US1

-15-